



# LV Intelligent Capacitors

for Power Factor Correction and Energy Saving

**WC3 Series / WCX3 Series**

## Introduction

WII's new generation of reactive power compensation equipment, LV Intelligent Capacitors for Power Factor Correction and Energy Saving (or simply called "intelligent capacitors"), can be used as individual compensators or as part of a centralized capacitor bank, formed by two or more capacitors connected in parallel.

Compared to traditional capacitors, these intelligent capacitors offer additional protective features, including overvoltage, overtemperature, and undervoltage protection.

Each intelligent capacitor comes with a built-in microprocessor, which automatically performs power-factor correction and controls the zero-crossing switch.

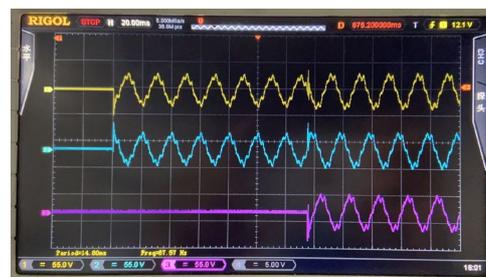
- The built-in three-phase "zero-crossing switch" of the intelligent capacitor performs the switching operation (switch-on or switch-off) on its switch contacts one after the other, with a pre-determined (fixed) time interval between the two. Figure 1 shows the current waveforms of Lines 1, 2, and 3 during a switch-on.
- During switch-on at the voltage zero-crossing point, no inrush current is generated, which reduces the impact on the main power source and extends the service life of the capacitor. See Figure 2(A).
- During switch-off at the current zero-crossing point, no arc flash is generated, which protects the switch contacts from damage. See Figure 2(B).



**Standard Type**  
WC3 Series

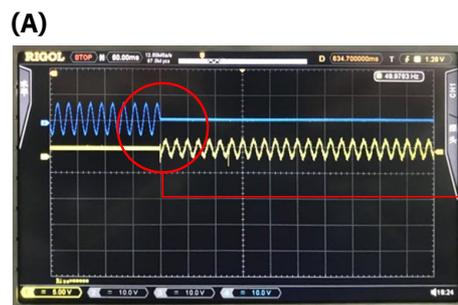
**Harmonic Suppression Type**  
WCX3 Series

**Figure 1** Three-phase current waveforms.

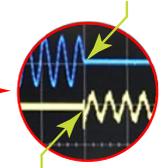


Yellow: L1  
Blue: L2  
Pink: L3

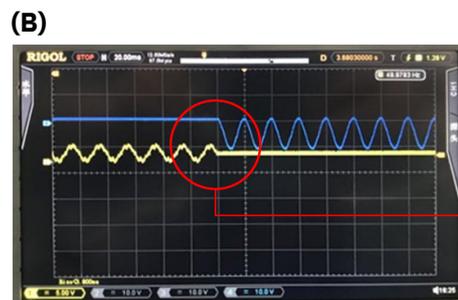
**Figure 2** Waveforms during switch-on or switch-off at voltage or current zero-crossing points.



Switch turns on automatically at voltage zero-crossing point.



Without inrush current.



Blue: voltage waveform  
Yellow: current waveform

Switch turns off automatically at current zero-crossing point.

There is no flash arc so that the switch contacts can be protected.

## Specifications

- Operating temperature: -25°C ~ +45°C
- Relative humidity for application: 20% ~ 90%
- Applicable altitude: ≤ 2,000 m
- Frequency: 50 or 60 Hz
- Phase: 3Φ
- System voltage:  
220 ~ 240V / 380 ~ 440V (Standard Type)  
220V / 380V (Harmonic Suppression Type)
- Special specifications available upon request



## Features

### Standard Type (WC3 Series)

- High reliability of the intelligent capacitor has been demonstrated by a test of more than one million switch-on and switch-off operations.
- Each intelligent capacitor can perform power factor correction on its own. When two or more units are connected in parallel to form a centralized capacitor bank, the first unit in parallel acts as the power factor regulator of the capacitor bank (if the first unit fails, the second immediately takes over, and so on).
- Capable of self-diagnosis for fault detection, it also offers additional protective features such as overvoltage, overtemperature, and undervoltage protection.
- Each intelligent capacitor can display power factor, voltage, current, reactive power, number of connected capacitors, temperature, and indications of failure.
- Each unit undergoes a 48-hour burn-in test before delivery to ensure product quality.

Model	Max. Voltage (V)	Rated Capacity (kVAR)	Number of Capacitors	Height H (mm)	Product Dimensions and Model Name Explanation
WC34-250-5	250	5	One	240	(Unit: mm) 
WC34-250-10		10		240	
WC34-250-15		15		290	
WC34-250-20		20		290	
WC34-250-25		25		340	
WC34-250-30		30		340	
WC33-450-7.5	450	7.5 (2.5+5)	Two	240	
WC33-450-10		10 (5+5)		240	
WC33-450-20		20 (10+10)		240	
WC33-450-25		25 (10+15)		290	
WC33-450-30		30 (15+15)		290	
WC33-450-35		35 (15+20)		290	
WC33-450-40		40 (20+20)		290	
WC33-450-50		50 (25+25)		340	
WC33-450-60		60 (30+30)		390	
WC33-450-70		70 (35+35)		440	

Note : The data above are given as examples only. Please contact us with your special requests and for final specifications.

### Harmonic Suppression Type (WCX3 Series)

- Sharing the same features and functions with the WC3 Series, the WCX3 Series intelligent capacitors have the additional capability of suppressing harmonics and preventing related damage.

p = 6% (fn = 60 Hz)

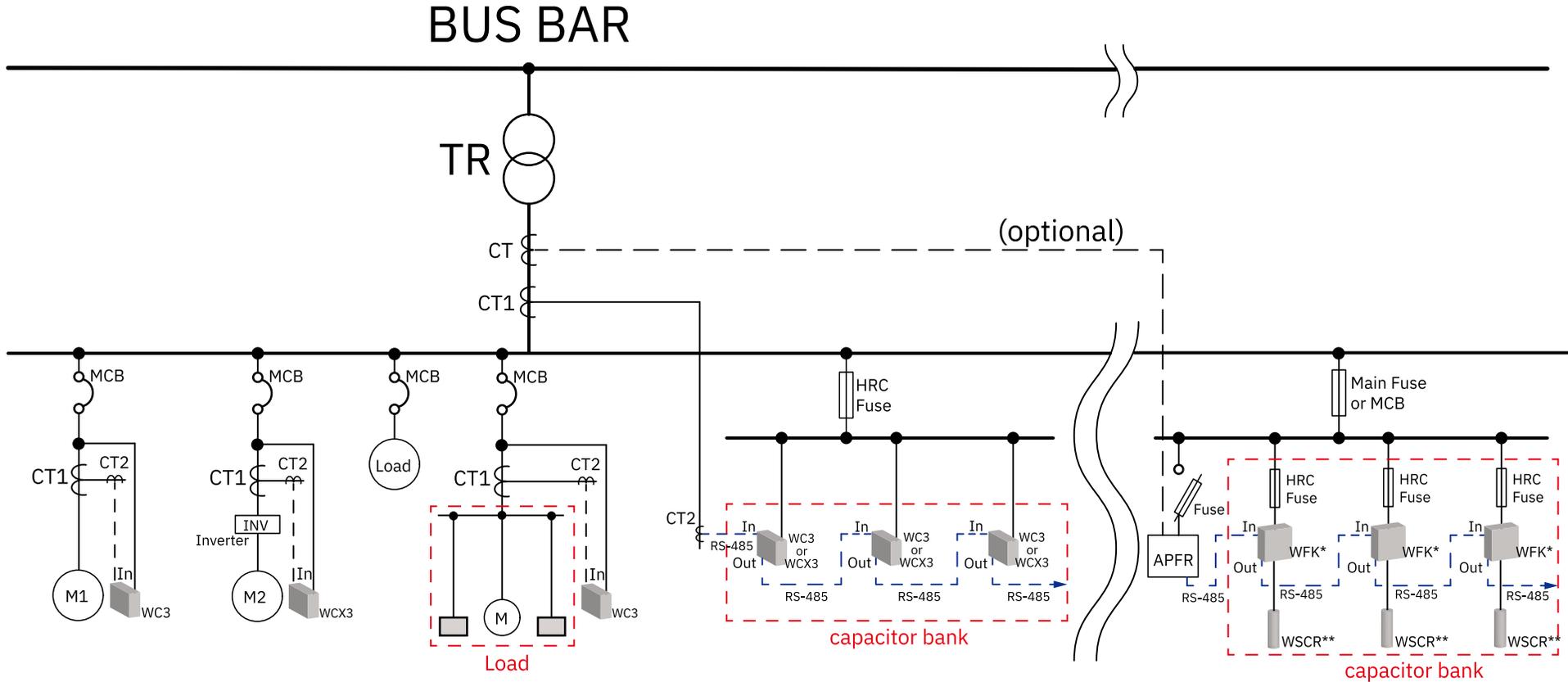
Model	Max. Voltage (V)	Rated Capacity (kVAR)	Dimensions (mm)					Product Dimensions and Model Name Explanation
			A	B	C	D	H	
WCX34-250-5	250	5	410	160	310	140	358	
WCX34-250-10		10	410	160	310	140	358	
WCX34-250-15		15	410	160	310	140	358	
WCX34-250-20		20	410	160	310	140	358	
WCX33-450-5	450	5	410	160	310	140	358	
WCX33-450-10		10	410	160	310	140	358	
WCX33-450-15		15	410	160	310	140	358	
WCX33-450-20		20	410	160	310	140	358	
WCX33-450-30		30	440	190	350	170	408	
WCX33-450-40		40	440	190	350	170	458	

Note : The data above are given as examples only. Please contact us with your special requests and for final specifications.



## Application Examples

TR: distribution transformer  
 CT: current transformer  
 M: motor  
 APFR: automatic power factor regulator



3 examples of power factor correction solutions using an individual unit of **intelligent capacitor**

power factor correction solution with a centralized capacitor bank using multiple units of **intelligent capacitors**

**or** power factor correction solution with a centralized capacitor bank using **traditional capacitors** and power factor correction devices

\* WFK: zero-crossing switch

\*\* WSCR: low-voltage tubular power capacitors

(For details, please refer to the catalog "Low-Voltage Power Factor Correction Capacitor Bank.")